Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

1. (Original) A surgical suction irrigation handpiece comprising:

a housing shell of rounded elongate shape having a first end, a second end, a first elongate wall extending between and rounded into said ends, said first elongate wall having a convexly rounded part adjacent said first end and a transverse groove between and rounded into said second end and said convexly rounded part, said shell further having a second elongate wall opposite said first elongate wall and extending between said ends;

an elongate conduit extending beyond said first end of said shell and integrally fixed with respect to said shell adjacent a length edge of said second elongate wall;

at least one fluid tube extending away from said shell adjacent said second end;

manual valve actuators facing out from and spaced along said elongate second wall adjacent said conduit and including a first said valve actuator located substantially opposite and facing away from said convexly rounded part of said first elongate wall and a second said manual valve actuator located substantially opposite to said transverse groove in such first elongate wall.

Claims 2-42 (Cancelled).

43. (New) A surgical fluid flow controlling handpiece comprising:

a housing having a fluid flow passage with a surgical site opposable port;

an irrigation liquid connection to said housing and an irrigation valve between said irrigation connection and said fluid flow passage, said irrigation valve having an open position communicating said irrigation connection to said fluid flow passage and having a further position of reduced communication of said irrigation connection to said fluid flow passage;

a suction connection to said housing and a suction valve between said suction connection and said fluid flow passage, said suction valve having an open position communicating said suction connection to said fluid flow passage;

a limited suction member associated with said suction valve and having a position corresponding to a limited suction flow between said suction connection and fluid flow passage.

44. (New) The apparatus of Claim 43 including a surgical site engagable tip coupled to said port.

45. (New) The apparatus of Claim 43 in which said suction valve is a reciprocating valve and said member associated with said suction valve is a rotating valve.

46. (New) The handpiece of Claim 43 comprising:

Said suction valve including a valve barrel interposed in said fluid flow passage and an axially displaceable valve member having a substantially closed position;

said limited suction member comprising a leak control sleeve rotatable in said valve barrel and around said axially displaceable valve member, said sleeve having a peripheral wall and a window through part of said peripheral wall, said sleeve having at least one circumferential position communicating said window and housing fluid flow passage;

a seal member on said valve member.

47. (New) The apparatus of Claim 46 in which said seal member sharing a common radial plane of said valve barrel with

said housing fluid flow passage and sleeve window with said valve member in said closed position.

48. (New) The apparatus of Claim 46 in which said sleeve has a closed circumferential position sealing said sleeve peripheral wall against said seal member and thereby blocking flow through said housing fluid flow passage, said sleeve having a substantially fully open circumferential position opposing said seal member to a circumferentially intermediate part of said window and thus opening a flow path (1) circumferentially through said window and (2) around said seal member and (3) between parts of said housing fluid flow passage separated by said valve barrel.

49. (New) The apparatus of Claim 46 in which said window has axially spaced, substantially parallel, circumferentially extending edges and a circumferential end portion, said circumferentially extending edges converging and forming a circumferentially elongated, tapered indent, such that successive increments of circumferential opening of said sleeve, from a closed circumferential position toward a fully open circumferential position, include (1) a narrow flow opening past said axial rib and (2) successive incrementally wider flow openings, to facilitate precise selection of flow rate in a relatively narrow band of flow rates at the low end of the range of flow rates permitted by relative positioning of said window with respect to said seal member.

50. (New) The apparatus of Claim 49 wherein said substantially parallel circumferential edges lie in axially spaced first and second substantially radial planes of said sleeve, said tapered indent having one circumferential edge continued in said first radial plane and its other circumferential edge angled from said second radial plane toward said first radial plane.

51. (New) The apparatus of Claim 49 in which said seal member comprises a spool having diametrically opposite axially extending ribs, said sleeve having a further window circumferentially spaced from and on the opposite side of said sleeve from said first mentioned window, said windows being open to parts of said housing fluid flow passage separated by said valve barrel, said windows together including three relatively blunt circumferential end portions and a tapered end portion defined by said tapered indent, said tapered end portion making said first mentioned window longer than said second window, such that said one said spool rib starts to open said tapered end of said first mentioned window while the other said rib is still circumferentially spaced between said windows, such that the said flow rates at the low end of the range are precisely controlled by the circumferential location of said first mentioned rib along said window tapered end portion.

52. (New) A surgical fluid flow controlling handpiece having a range of relatively low flow rates and a relatively high flow rate, comprising:

a housing having a fluid flow passage therethrough;

a first flow control on said housing and operatively associated with said passage, said first flow control having a range of positions corresponding respectively to a range of relatively low flow rates through said fluid flow passage;

a second flow control on said housing and operatively associated with said passage and said first flow control, said second flow control having a position and said first flow control having a given position in its said range of positions, which said first flow control given position and said second flow control position together correspond to a relatively high flow rate through said passage.

53. (New) The apparatus of Claim 52 in which said second flow control comprises a valve member axially displaceable in said housing and located across said fluid flow passage, said valve member having a transverse opening, said transverse opening being in registry with said fluid flow passage to provide said relatively high flow rate, said axially displaceable valve member having a seal adjacent said transverse opening, said first flow control comprising a rotatable further member in said housing and surrounding said valve member, said range of positions being a range of circumferential positions of said rotatable further member with respect to said housing and valve member, said rotatable further member having a wall, said wall being interposed between said valve member seal and said fluid flow passage at one end of said range of positions, said rotatable further member having a window interposed between said seal and said fluid flow passage at positions in said range and offset from said one end of said range, said offset positions corresponding to different positions of said window open to said seal and fluid flow passage, and thus to said range of relatively low flow rates.

54. (New) The apparatus of Claim 52 in which said first flow control comprises an axially displaceable valve member located in said housing and across said fluid flow passage, said valve member having a transverse opening displaceable through said range of positions with respect to said fluid flow passage, in which said valve member transverse opening is substantially fully open to said fluid flow passage at substantially one end of said range and is substantially fully closed to said fluid flow passage at the other end of said range and is correspondingly variously partly open to said fluid flow passage at intermediate parts of said range, said fluid flow passage having a relatively low flow rate fluid

supply connection, said second flow control comprising normally open switch contacts on said housing and operatively associated with said valve member, said normally open condition of said switch contacts corresponding to a first part of said range of valve member positions excluding said fully open position of said valve member, an electric circuit including said contacts and an energy source and a fluid pump unit connected to said fluid supply connection, said switch contacts having a closed position corresponding to a second part of range of valve positions including said fully open end of said range and to an energized condition of said fluid pump unit wherein it supplies a relatively high fluid flow rate.

55. (New) A surgical suction irrigation handpiece comprising:

a housing comprising a suction port connectable to a suction source, an irrigation liquid inlet port, and a third port opposable to a surgical site;

an irrigation liquid flow control assembly on said housing;

a remote irrigation liquid pump unit and an elongate irrigation liquid path connecting said pump unit and handpiece;

a suction flow control assembly on said handpiece including (1) a hand engagable, reciprocating member and (2) a hand engagable rotating member adjacent said hand engagable reciprocating member.

56. (New) The apparatus of Claim 55 including a suction flow path between said third port and suction port, said hand engagable reciprocating member comprising a reciprocating valve element in said suction flow path, said hand engagable rotating member comprising a rotatable valve element in said suction flow path.

57. (New) The apparatus of Claim 56 in which said reciprocating valve element has a closed position and said rotating valve element has an open position defining a suction flow bypass around said reciprocating valve element.

58. (New) A surgical suction irrigation handpiece comprising:

a housing having a suction port, an irrigation liquid inlet port, and a third port opposable to a surgical site;

an irrigation liquid flow control assembly on said housing;

a suction flow control assembly on said housing and comprising

a first, relatively high rate, suction flow path between said suction port and third port, and

a second, relatively low rate, suction flow path between said suction port and third port.

59. (New) The apparatus of Claim 58 including a first suction valve and said first suction flow path and a second suction valve and said second suction flow path.

60. (New) The apparatus of Claim 59 in which said first suction valve comprises a reciprocating valve and said second suction valve comprises a rotating valve.

61. (New) The apparatus of Claim 58 in which said rotating valve is located in one said suction flow path.

62. (New) The apparatus of Claim 58 in which said first, relatively high rate, suction flow path includes a substantially straight portion, and said second, relatively low rate, suction flow path includes a curved portion offset from said straight portion.

63. (New) The apparatus of Claim 62 including a first suction valve defining said straight portion and a second suction valve defining said curved portion.

64. (New) The apparatus of Claim 63 in which said first section thereof comprises a reciprocating valve and said second suction valve comprises a rotary valve.

65. (New) A surgical suction irrigation apparatus, comprising:

a handpiece:

a pump unit having a gravity irrigation liquid supply inlet and a gravity irrigation liquid flow conduit connected between said inlet and handpiece, a pressure adding impeller in said conduit, said impeller having a deenergized condition in which it is inert to gravity pressure, irrigation liquid flow to said conduit, said impeller having an energized, pressure adding condition in which irrigation liquid in said conduit downstream of said impeller is at higher than gravity pressure;

a suction valve on said handpiece between a suction source connection on said handpiece and a surgical site connectable port on said handpiece;

an irrigation liquid valve on said handpiece between said port and an irrigation liquid inlet connection to said conduit, said irrigation liquid valve including an impeller deenergized/impeller energized control operatively connected to said pump unit, said irrigation liquid valve having partially and fully closed positions corresponding to said deenergized condition of said pump unit and to gravitational pressure irrigation liquid at said irrigation inlet connection, said irrigation liquid valve having partially and fully opened positions corresponding to said energized pressure adding condition of said pump unit and to greater than gravitational irrigation liquid pressure at said irrigation liquid inlet connection.

66. (New) The apparatus of Claim 65 in which said control comprises a switch on said handpiece and a signal path between the said switch and pump unit.

67. (New) The apparatus of Claim 66 in which said switch is an electric switch in said path is an electric current flow path.

68. (New) The apparatus of Claim 67 in which said pump unit comprises an electric current source and said irrigation liquid inlet is formed as an upstanding hollow spike having an irrigation liquid supply bag engagable, hanger portion.

69. (New) A surgical suction control handpiece, comprising:

a housing having a fluid flow passage with a surgical site imposable port;

a suction connection to said housing;

a first suction valve actuator interposed between said section connection and fluid flow passage and having a full open position corresponding to a relatively high suction flow;

a second suction valve actuator independent of said first suction valve actuator and having a full open position corresponding to a relatively low suction flow rate.

70. (New) The apparatus of Claim 69 including first and second suction valves respectively operatively associated with said first suction valve actuator and said second suction valve actuator.

71. (New) The apparatus of Claim 70 including first and second suction paths respectively through said first and second suction valves.

72. (New) The apparatus of Claim 71 in which said first suction valve actuator comprises a reciprocable actuator and